A SECOND CASE OF RECOVERY FROM PERFORATING GUNSHOT WOUND OF THE ABDOMEN THROUGH LAPAROTOMY.[1]

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Daniel Mahoney, æt. 25, sailor, was brought to the Chambers Street Hospital in a cab, August 12th, 1886, at 7:40 P. M. He came first to the reception room without assistance, complaining only of pain in the abdomen while walking. Twenty minutes before, in a friendly scuffle, he had been shot with a pistol of 38 calibre. He was slightly pale and was perspiring freely, and since the injury had felt some nausea but had not vomited.

The axillary temperature was 97°, P. 96 full, R. 26. The abdomen was normal to sight and touch, but for the presence of a bullet wound two inches below and two inches to the left of the umbilicus, in the vicinity of which there was tenderness on pressure. The skin about the wound was normal, the edges were blackened and the lumen occupied by a dried clot of blood. The trowsers, just below the waist-band, and two shirts were found to be pierced by the bullet, no trace of which could be found inside the skin of the trunk. The urine was drawn. It was free from blood. Rectal examination was negative. After washing the skin thoroughly, the wound was covered with a compress of iodoform gauze and absorbent cotton and gr. $^1/_8$ morphine administered hypodermically. The man had always been in good health, drank only occasionally and was of excellent physique. The dangerous character of the wound was explained to him, and he consented at once to an operation. Two hours later his condition was as follows: P. 104, R. 24, T. 98. No pain, slight rectal tenesmus, abdomen unchanged.

A probe could not be introduced beyond the muscular layer. He-

[1] Reported at the meeting of the New York Surgical Society, October 11, 1886 For report of Dr Bull's first case, see ANNALS OF SURGERY, 1885, Vol. 1, p.479.

patic dullness normal. No emphysema about the wound. He had made an ante-mortem statement to the coroner and had been visited by several friends.

At 9:40 P. M. ether was administered by Dr. Tiernan, and the operation was begun fifteen minutes later. The wound was explored by an incision 3 inches long and found to pass directly backward through the rectus muscle. The incision was then made in the median line from the umbilicus to the pubes. Coils of small intestine came at once into view. They were bathed in odorless bloody serum, several ounces of which escaped from the cavity. As the general condition did not indicate any serious hemorrhage, I proceeded to examine the intestine without waiting to sponge out the cavity. About half the length of the small intestine was drawn out, rapidly sponged, inspected and placed under warm towels, before a wound was discovered. Then a loop was met with through which the ball had evidently

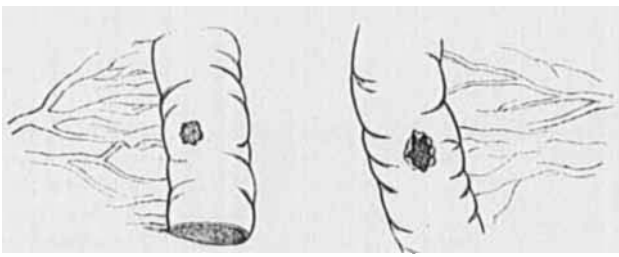

FIG. 1. FIRST PERFERATING WOUND OF SMALL INTESTINE. (Entrance.)

FIG. 2. SECOND WOUND OF SMALL INTESTINE. (Exit.). Opposite No. 1.

passed. The wound on one side was evidently that of entrance (Fig. 1). It was as large as the top of a lead pencil, its edges adhering without prolapse of the mucous membrane. The other directly opposite, and midway between the free and attached border of the gut, was twice as large with a little fold of mucous membrane occupying its lumen. (Fig. 2). There was no escape of feces. The gut was held up by an assistant, a sponge placed beneath each wound, and the abdominal incision protected by a large flat sponge, while the sutures were inserted after Lembert's method. The finest iron dyed silk was employed.

Three sutures sufficed for the first, and six for the second wound. Iodoform was rubbed along the line of suture. Several more feet

of small intestine were examined without finding any other sign of injury than half a dozen subperitoneal extravasations of blood no greater in area than a pea. The mesentery was dotted with smaller extravasations. There was no decided congestion of the gut nor any lymphy exudation on its surface. The pelvis was then occupied by one or two coils of small intestine and the sigmoid flexure, while the cæcum projected from the right side partly obscured by the small intestine. To examine the rest of the gut, I removed, with the hand and sponges, at least two tumblerfuls of clotted blood. It was then evident there was a hemorrhage from some vessel deep in the pelvis. It was not very active, for the pressure of a large sponge controlled it. All the small intestine that could be drawn out was then held under towels outside the wound, and the sigmoid flexure also exposed to

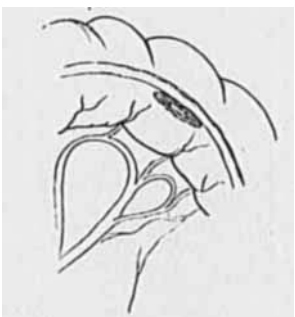

FIG. 3. THIRD WOUND; OF SIGMOID FLEXURE. (Penetration uncertain.)

view. A longitudinal wound, $^1/_2$ an inch in length, was met with close to the attached border. The muscular coat was bared, but no mucous membrane was seen, (Fig. 3.) The wound was closed with four sutures. The cœcum was now pushed out of the way and a view obtained of the sigmoid mesocolon, and the source of the bleeding discovered to be a circular wound near to its attachment to the middle line, and fully three inches from the edge of the gut, (Fig. 4.) When the mesocolon was made tense by traction on the flexure the bleeding ceased; when relaxed a stream of venous blood issued from the wound so copiously as to fill the cavity of the pelvis one-third full several times before it was controlled. Pressure below the wound stopped it, but the vessel from which the blood issued could not be seen, even after the wound was enlarged with scissors; The tissues on the lower

edge, when pressure was effective, were finally grasped in a large "bite" with long artery clamps, a silk ligature, passed by means of a curved needle, under the blade of the forceps and tied as the forceps were withdrawn. This controlled the bleeding. Above and to the inner side of the wound there was an extravasation of blood which, as it was firmly clotted, was not interfered with. Another wound of the mesocolon stripping off its peritoneal coat over an area as large as a quarter was found close by, (Fig. 4.) This and the preceding one was

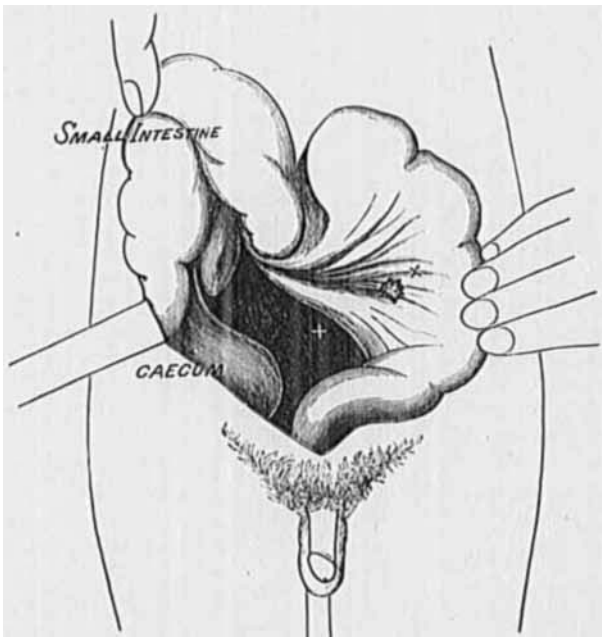

FIG. 4. THE TWO WOUNDS OF THE MESOCOLON. (The superficial one involved the peritoneum only; the deeper one, +, was the source of the hemorrhage.)

not sutured, but rubbed thoroughly with iodoform. One of the appendices epiploicæ was found torn and bleeding at its extremity. It was tied at the base with catgut and cut off. Considerable blood had

been observed to come into the pelvis from the region of the cœcum during the efforts to stop the hemorrhage already referred to, but on careful sponging there was found no fresh source of bleeding. A sponge in the grasp of a long forceps was passed into both the lumbar and epigastric regions and brought out perfectly clean. The omentum had not been seen up to this time, but the sponge drew it out from the left lumbar region and its extremity being found lacerated, but not bleeding, was tied to the extent of 3 inches and cut off. The rectum was again examined with the finger, and the bullet not being found there, I concluded it was lodged in the extravasated blood in the mesocolon, and decided not to search for it further. Several pints of warm carbolic acid solution (about 1 to 100) were poured from a pitcher into the pelvis and sponged out, and the intestines, as they were replaced, freely washed with the same solution. The abdominal wound was sutured with silver wire and silk sutures passing through all the layers, and with superficial catgut sutures. A continuous catgut suture was applied to the peritoneum. Iodoform gauze covered the line of suture, and over this a compress of carbolized gauze with a metallic coil (Leiter's), held in place by a binder. The incision into the bullet wound was stuffed lightly with iodoform gauze. The duration of the operation was 1 hour and 50 minutes. The intestines were held outside the cavity just one hour; and thirty minutes were spent in applying the sutures. Ether was given for 2 hours and 10 minutes. The pulse at the end of the first hour was 116; at the close of the operation 128, and of fair volume. The extremities were cold, but respiration was satisfactory. Four subcutaneous injections each of whiskey ʒj and tinct. digitalis ♏x were given in the last hour.

I was fortunate in having the advice of Professor J. D. Bryant, who agreed with me as to the propriety of the operation; and the assistance of Dr. C. H. Wilkin, Dr. B. F. Curtis, and Dr. Garrison; Dr. Parke, Dr. Tiernan, and Dr. Bryant, of the house staff; Dr. Robert Eustice, and Dr. John P. Adams, also rendered valuable help The room was not specially prepared for the operation; it is used for out patients during the day. But in other respects the utmost attention was given to antiseptic details. The sponges were taken from a 5 per cent. solution of carbolic acid, in which they had been lying for two months, and rinsed in warm 2 1/2 per cent. solution. During the operation they were washed in a much weaker, about 1 to 100, and the silk employed I boiled myself in a 5 per cent. solution for half an hour previous to the operation. The towels employed were old ones which had been washed in 2 1/2 per cent. solution, and were kept warm with a heater.

After history of the case.—August 14th, 10 A. M., P. 108, R. 34, T. 100. Thirty-six hours after operation. Reaction was prompt, and ice water was run through the coil twelve hours later, and is now continued. Magendie's solution ♏xxxii, had been given subcutaneously in 5 injections. Ice by the mouth; and by rectum 5 enemata of beef peptonoids ʒiij gr. and whiskey ʒss. During the last 12 hours he had been allowed champagne ʒij, or milk and lime water ʒij every 2 hours. He has dozed most of the time, complained of a little pain. There is slight tympanites. He is troubled with occasional cough, with slight

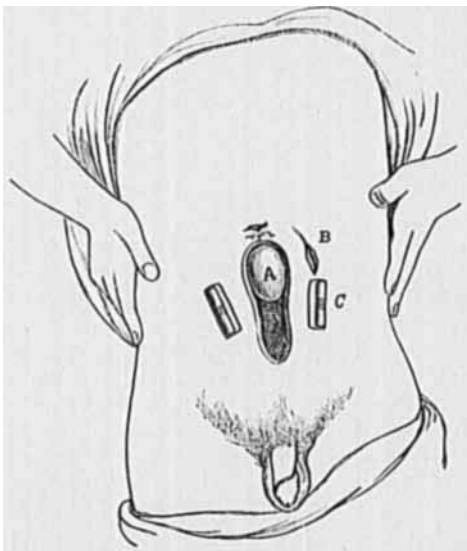

FIG. 5. APPEARANCE OF THE WOUND ON THE EIGHTH DAY. A. Protruding intestine; B. Point of original wound; C. Silver wire relaxation suture secured by pieces of wood.

mucous expectoration. Urine drawn by catheter has amounted to ʒxx, It is high colored and contains urates, but no albumen; Sp. gr. 1020. 10 P. M., P. 98, R. 26, T. 100. Tongue is moist, and there has been no nausea.

August 17th. Fifth day, 9 A. M, P. 80, R. 24, T. 101°. Up to this time the progress of the patient has been uneventful

There has been slight pain and tympanitis, no nausea or vomiting. Liquid diet has been given, and occasional doses of morphia hypodermically. The cold water coil has been continued, though the temperature has not been over 100 1/2°, nor the pulse over 100. A copious normal, but soft fecal evacuation took place after an enema. A purulent collection in the wound made itself evident by discharge about the sutures. The line of union which was firm was broken down, and a thin layer of pus found at the bottom in the extraperitoneal tissue, but in the upper half of the wound the peritoneum along the line of suture was sloughing, and on parting its edges a portion of intestine was visible, firmly adherent to the parietes. I mopped it with 2 1/2 per cent. carbolic acid and stuffed lightly with iodoform gauze. The pulse, respiration and temperature were normal after this.

August 18th. Sixth day. While coughing in the night a piece of gut protruded from the upper third of wound, but did not overlap the skin. Its surface was coated with grayish lymph with granulations in places. The wound was 5 inches long and 2 inches wide.

The edges were held together with two "relaxation sutures" of silver wire, and compression made on the intestine with a small pad of iodoform gauze and wood. By means of these, the gut was pushed back from day to day while the edges were being drawn together, and the lower part of the wound was filling with granulations. On the ninth day solid food was allowed. On the eighteenth day the intestine was on a level with the wound, the whole surface (3 3/4 inches long and 5/8 wide) was granulating finely. Skin grafts were put in several times. Balsam of Peru replaced the iodoform, and at the end of eight weeks the cicatrization was complete. It is now only a week that he has been out of bed.

With the report of the case, the patient was presented for the inspection of the members of the Society.